

Abstract

A support element is disposed between a housing and a fragile structure resiliently mounted within the housing. The support element includes an integral, substantially non-expanding ply or layer of melt-formed ceramic fibers containing at least alumina and silica. The fibers have an average diameter ranging from about 1 micron to about 14 microns and have been prepared by a process of heat treating under a time-temperature regimen of one of (i) heat treating said fibers at a temperature of 990°C to at least 1050°C for greater than 1 hour such that the treated fibers have about 5 to about 50 percent crystallinity as detected by x-ray diffraction, and a crystallite size of about 50Å to about 500Å, or (ii) heat treating said fibers at a temperature of greater than 1050°C for an effective time such that the treated fibers have about 5 to about 50 percent crystallinity as detected by x-ray diffraction, and a crystallite size of about 50Å to about 500Å. The resultant support element provides a minimum residual pressure for holding the fragile structure within the housing of one of at least 4 psi after at least 200 cycles of testing at 900°C or at least 10 psi after at least 1000 cycles of testing at 750°C. Such a support element may be used in devices for the treatment of exhaust gases such as catalytic converters, diesel particulate traps and the like. A method of mounting a fragile structure in such a device is also provided.

20